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IRON AGE
NOVEMBER 21, 1986

MANUFACTURING MANAGEMENT

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Why the interest in Powder Metal Forgings

NOVEMBER 21, 1986 VOL. 229, NO. 22

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MANUFACTURING MANAGEMENT

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islative program for consideration when the new Congress meets in January.

In releasing the report, Rep. Doug Bernard (D-Ga.) noted that it was the first Congressional evaluation of Mr. Reagan's VRA program, and added:

"The committee finds that without global country and product coverage, it is unlikely that the President's and Congress' targets for limiting steel imports will be achieved. The VRA process is not sufficiently comprehensive—only legislation mandating the targets will succeed in achieving the desired goals."

The Democrats recommended:

—Congress should pass legislation limiting total steel imports of all grades and products to 20.2 pct of the U.S. market, and the U.S. Trade Representative should start negotiations with countries not covered by the VRAs: Canada, Sweden, Argentina, and Taiwan.

—The Administration should limit steel imports from countries that won't agree to a VRA, and the Administration should also strictly enforce the provisions of the VRAs that prohibit countries from sending only high value products to the U.S.

—Congress and the Administration should take tough measures to prevent circumvention of the program through diversion to non-quota countries where steel products destined for the U.S. market are finished.

—Members of Congress should try to get accurate data on the volume of "indirect" imports of products containing steel such as cars, farm machinery, and construction machinery.

—The legislators should put a 100 pct "Buy America" requirement on all government procurement of steel mill products. And it should also pass a bill extending Mr. Reagan's steel program for five years from Jan. 1, 1987—but the bill should also require steel firms to keep using their resources to modernize steel plants.

—And, Congress should pass bills to give the steel industry compensation for past injuries resulting from unfair trade practices, and to give the U.S. Customs Service enough money to prevent illegal steel shipments from entering the country.

To back up those recommendations, Rep. Bernard concluded, "Although steel imports have been cut back from their all-time high levels as a result of the President's program, the targets of the program have not been met. Steel imports in June 1986 still captured 22.7 pct of the U.S. steel market (compared to the Administration's VRA goal of 18.5 pct). The reasons for this missed opportunity to reclaim jobs and local business for our industries is largely that the program, as implemented, has not been comprehensive. Major importers such as Canada, Sweden, Taiwan, and Argentina are not covered."

R&D funding for materials shows 4.6 pct increase for FY87

At first glance the $1.15 billion the government is allocating for R&D in materials science and engineering looks pretty good.

What makes it look that way, however, is the $119 million earmarked toward the new national aerospace plane. Many other programs have suffered severe cutbacks.

According to the Federation of Materials Societies in Washington, the largest recipient of materials R&D funds, the Department of Energy, has had its budget cut from $609 million in FY86 to $479 million in the current year. The Department of Defense, thanks mainly to the national aerospace plane, moves up from $164 to $291 million.

Also moving up are the National Science Foundation and NASA, with the NSF increasing from $137 to $148 million. NASA's increase is $170 million in FY87 from $121 million the previous fiscal year.

The National Bureau of Standards also moves up, from $25 to $35 million, while the Bureau of Mines goes down from $40 to $25 million. The funding for the interagency acid deposition program remains the same, $1.075 million.

Hard-hit DOE programs include solar energy and advanced nuclear reactor research. The above programs were cut 45 and 61 pct, respectively. Funding for nuclear space and defense power systems is being increased from $20 to $71 million.

Materials R&D

(In Millions of Dollars)

	FY85	FY86	FY87
Department of Energy	647	609	479
Nat'l Science Foundation	135	138	148
Nat'l Bureau of Standards	23	25	36
Bureau of Mines	33	40	25
Interagency Acid Deposition Program	1	1	1
Department of Defense	155	164	291
NASA	107	121	170
Total	1,100	1,098	1,150

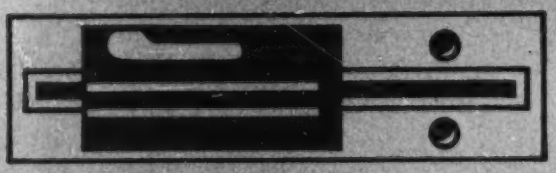
Source: Federation of Materials Societies

Federal court upholds 'right-to-know' rules on hazardous materials

In a precedent-setting ruling affecting manufacturers, a Federal appeals court has upheld a state law with "right-to-know" rules for workers dealing with hazardous substances.

Last month, a Pennsylvania state law requiring right-to-know rules was largely upheld by the Third U.S. Circuit of Appeals in Philadelphia. Business groups had argued that the state law was preempted by weaker Federal laws and rulings that require the U.S. Labor Department Occupational Safety and Health Administration (OSHA) to administer national right-to-know standards.

A Federal district court in Pennsylvania first held that much of the state law was preempted by



Compared to their foreign competitors, many U.S. manufacturers are slow to adopt new technology into their factories.

BY ROBERT E. HARVEY

Though urged to take injections of advanced technology to remain competitive, U.S. manufacturers often faint at the sight of the needle.

Computer Shock Syndrome, as this allergic reaction to doses of computer-integrated manufacturing (CIM) might be called, looms as a major reason U.S. manufacturing facilities are falling before the Japanese juggernaut.

Even when fighting for survival against overseas competition, some manufacturing firms suffering from computer shock have been known to balk at taking life-saving doses of computer-aided automation.

Particularly widespread in mid-size and smaller companies, computer shock, nevertheless can turn up in the largest facilities. In this condition, firms, even when confronted by cutthroat competition, freeze at the prospect of computerized manufacturing.

The condition is diagnosed in a report on advanced manufacturing technology use prepared by the Technology Management Center, Philadelphia, for the U.S. Commerce Department: "Though new technologies are readily available, companies are avoiding their use primarily because they do not understand them, find them too confusing, and are intimidated by them."

The report noted that a company's initial explanations why it was not using new technologies usually were: "The machines are two expensive; we can't obtain a return of investment over two years, or my batch runs are too

small to justify the equipment."

These responses revealed a lack of understanding of and confusion about the nature and value of advanced computer technologies, noted the report.

It is ironic that the country most responsible for developing high technology has so much trouble adopting that technology.

Technology has been stymied by a variety of obstacles. Overcoming these is prerequisite to a resurgence of U.S. manufacturing. The widening gap between U.S. and Japanese manufacturing competence is due not to inferior technology but, in a large part, to the inability of U.S. companies to effectively implement available technologies and strategies.

One of these obstacles is the widening distance between those who choose the technology and those who use it.

Resistance To Change

In larger firms, the profusion of staff specialists and the build up of multi-layered middle management has moved implementation responsibility from users to the specialists. The result: hostility by factory workers to staff and specialists, and resistance to change. Technological change imposed from above is simply viewed as an irritant and has little chance of success. In Japan, the workers spearhead the adoption of advanced technology, using staff and specialists when needed.

"What has happened over the past several years, as we have moved to more sophisticated technology, we have gone from single items to systems," says Charles Downey, vice president, marketing, Industrial Automation Systems Group, Gould Inc., Andover, Mass. "What that has done is push the purchasing decision level up higher in the company.

"In the past, if you wanted a controller or software for the tool room, and you were the manager of tool control, you could go out and get what you needed. Now the tool room guy is not even part of the decision-making process."

As the focus shifts from individual equipment to systems (and even the most mundane piece of equipment is expected to tie into something) the manager in the tool room and, in many cases, even the plant manager are left out of buying decisions.

When equipment is purchased as part of a system, those responsible for purchases increasingly have lofty titles. Now, the executive vice president of operations, sitting in a corporate office, chooses what systems some distant plant will install. Financial and information officers as well are becoming heavily involved in automation decisions.

A brand new clique of executives with little factory knowledge are seizing responsibility for increasing amounts of factory equipment purchases.

'Top management doesn't understand what the technology is all about...'

Due to this shift in purchasing responsibility, several things are happening. For one, friction between plant engineers and upper management is growing.

"Both middle and upper management are the major contributors to the problem. But if I had to pick one culprit, it would be upper management," said William J. Finch, president, Finch Robotics, Montgomeryville, Pa., a manufacturing consulting firm. "Upper management throws the ball to and intimidates middle managers, who are afraid to fail. So, they fall back on what they know best, their experience."

But, doing things the old way often means rejecting the new.

The idea of using computers to control processes on a manufacturing floor is still not readily accepted, says an IBM spokesperson.

Computers are still foreign to people at all levels of employment. Many suffer fear of the computer terminal. Unfamiliarity and inexperience with computers leads many managers to be skeptical and fearful of taking risks with CIM.

Some believe that automation will not succeed until the current generation of line management – and CEOs as well – retire.

"Top management today basically is not manufacturing oriented," observed Mr. Finch. "It still thinks that replacement of direct labor is the key element in justifying technology.

"And they don't understand the factory floor. They, from what I see, seem to have lost sight of their goal – what they are in business for."

Paradoxically, many executives see technology as the solution to their productivity problems, but technology, at least initially, is usually not the answer.

"I yell loudest to get automation into companies," continued Mr. Finch, "but automation comes only after companies get back to the basics.

"Many companies today are operating out of control, and automation is not going to help them. These factories don't know how to schedule their parts, maintain their inventories, or maintain communications between workers and supervisors.

"Top management doesn't understand what the technology is all about, middle management is scared of it, and the engineers who know about it are too politically oriented to open their mouths."

In a Bind

Smaller companies, in particular, are in a bind. Their managers, intimidated by technology, are be-

Authors Robert H. Hayes and Steven C. Wheelwright, in their book, *Restoring Our Competitive Edge*, suggest that when management's knowledge of a manufacturing technology is low, the risk executives perceive in changing it is relatively high.

But as they gain more knowledge about the technology, surprisingly, their perception of the risks associated with changing it may actually increase. They see more problems with the technology, for example, while still uncomfortable about overcoming them. As a result, they often become even more conservative when called upon to make manufacturing technology-related decisions.

It is only when knowledge reaches a certain point that the perceived risk goes down. Similarly, the perceived opportunities from process change vary in a similar curve. At first opportunities seem good, then not so good, and finally, good again. Managers, knowing little about technology, are frequently persuaded to see in them tremendous promise and opportunity. Later, they are likely to experience great disappointment when computerized systems fail to meet expectations.

Managers, however, who finally get a solid understanding of their process technologies will see the value and potential of making technological changes and, most importantly, understand what is involved in making such a change.

ing told by major customers to automate or face a loss of business. Yet, they lack the technical staffs to get automation efforts pointed in the right direction.

And, they are leery about relying heavily on suppliers and consultants. "We have been looking at who could help the small manufacturer," explained Jacques Koppel, director, Technology Management Center and chief architect of the report on international competitiveness. "There really was not an effective resource. Small companies don't like consultants; they cost too much. Vendors and equipment manufacturers are not a lot of help either, for they are trying to sell a product and really don't understand how manufacturing works. Most of the sales people are sales people and not engineers."

As a result of ignorance, confusion and fear, not to mention a fixation on short term gain, spending on technology has become increasingly conservative. With some justification the current decline in capital spending can be traced to confusion by the new decision-makers over the complexities and risks of automation. Lacking knowledge of and proximity to operations, decisions now tend to be made by the numbers. But numbers can paint a distorted picture. The inaccuracies of current cost accounting and cost justification practices are the subject of many a seminar these days.

Working with inadequate information and cowed by the unfamiliar risks that accompany process change, the new decision-makers are putting automation decisions on hold.

More education, like this college class, is needed to overcome computer shock.

"People tend to manage by head count or other easy ways to measure the business," says Mr. Downey. "But when you talk about automation, the benefits of the automation may not be as easily quantifiable as decisions in the past. These people don't fully understand the benefits of automation at the factory level.

"I find it very difficult right now to sell a particular isolated product. It has to be able to integrate with a higher level system, so more evaluation, more justification, is needed. The purchasing decision just gets pushed up high-

er and higher until it stalls."

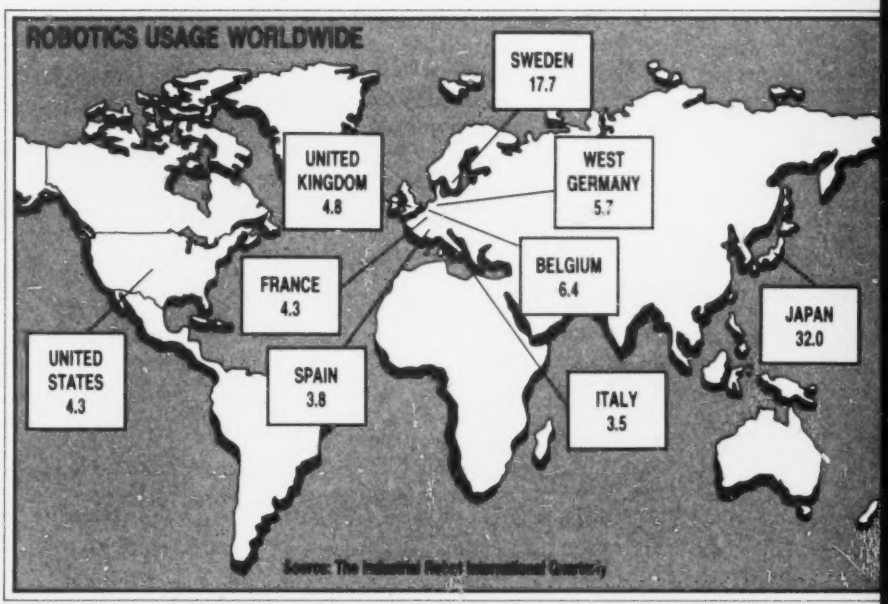
Basing modernization decisions on numbers rather than a knowledge of manufacturing can lead to trouble. In the later years of the Vietnam conflict, the purpose of the war was submerged beneath a numbers game. As the demands for body counts grew, lieutenants and captains began keeping two sets of books, one for actual and another for reported body counts. Twenty ducks made the body count list of one platoon.

In the factory, as in Southeast Asia, playing solely by the numbers tends to hide the overall purpose of an organization behind a drive to achieve certain short-term figures. What plant manager does not keep two sets of books?

"I have been in 100 plants where a plant manager still builds from his gut," notes Mr. Downey. "He gets all kinds of computer printouts and marketing forecasts and then he issues on a piece of paper his build schedule. He keeps two sets of books. He keeps a manual system while the computer system is running in parallel."

Executives with more understanding and support of factory floor operations are sorely needed if automation is to take hold.

"I have a theory," says Jerome J. Peloquin, president, Performance Control Corp., West Chester, Pa., an automation training company. "And it is that all line managers everywhere are involved in a conspiracy to prevent their bosses from knowing how bad things really are."



Comparison of Robotics Usage Worldwide: *The figures indicate the number of robots used per 10,000 workers. In comparison of robots/workers, the U.S. ranks sixth.*

Numbers Are Not Everything

Justification obstacles would be less formidable if those making the decisions were more comfortable with their knowledge about the factory.

Managers talk about the need to base decision-making on objective evidence rather than hunches by a line supervisor. But evidence is mounting that given the same numbers, executives are more likely to take a risk if they are comfortably knowledgeable about that risk. Managers, uneasy about manufacturing, are less likely to take risks regardless of the figures.

No business is without risk, wrote Robert H. Hayes and Steven C. Wheelwright, in their book, *Restoring Our Competitive Edge*. Usually it is not a question of whether to take a risk or not but substituting one risk for another. Not taking an immediate risk, for example, could mean bigger problems later on.

"This distinction needs to be stressed because of a manager's reaction to a particular type of risk often appears to depend more on his or her familiarity with that risk than on its actual magnitude," say Messrs. Hayes and Wheelwright. "The same technological risks that appear so ominous and uncontrollable to a marketing or financial manager might not be worrisome at all to the technical person.... The point is that the manager who has considerable experience with certain risks tends to have a much more realistic reaction to them."

If top management has little first-hand knowledge about a firm's process technology and how it has evolved, it may be less willing to accept the risks associated with changing that technology, say the authors.

But if no knowledge is bad, a little knowledge (see box p. 26) is worse. A major reason companies have cut back on computer purchases apparently is due to growing confusion about their use. It is not that executives know less about computers then they did five years ago. At present, they can at least talk a good game. A little wiser now, they are able to see the hazards more clearly, but are not yet knowledgable enough to glimpse the benefits. While intimate knowledge of computers and manufacturing is not essential for management, increased understanding does make risk-taking appear more palatable.

Though various obstacles make it difficult for technology to get in the door of many plants, once in the door is no guarantee that it will be implemented successfully.

(Cont. on p. 28.)

Education and Training

If education is critical to understanding and acceptance of computerization by executives, it is equally important for acceptance by line managers and workers. But education is often ignored.

"Though much forethought, planning, and cost justification normally accompany the installation of complex industrial automation systems, the job of training people to use them is all too frequently an afterthought," explains Jerry Guarino, Education Marketing Manager, Gould Industrial Automation Systems, Andover, Mass. "The results are sadly predictable. Without recognition of the human element in the industrial automation equation, the newest, most innovative technologies and production strategies will never realize their anticipated potential."

Introducing new equipment creates so much anxiety that the success of new technology often depends more on how it is accepted than how advanced the technology is.

Frequently, automation is introduced abruptly. People are not ready for it and reject it.

Often, says Mr. Finch of Finch Robotics, technology introduction is best left to an outsider – a consultant or a vendor – because someone has to take the brunt of the criticism when things go wrong (and they will).

Many companies need an outsider to go in and change the way they have been doing things for 30 years, he adds.

For an automation implant to be accepted, companies need a detailed plan. They need to get back to the basics and discover who they are and what they really want to do. And they have to prepare the company to reduce the chance of rejection.

Even when the need is recognized, providing adequate training is difficult. Because of its high cost, some equipment vendors have little incentive to provide top-notch training. The buyer, for his part, often doesn't know what good training is. Training often ends up with a expert lecturing a group of workers, who benefit little from the talk.

"An insidious situation now exists," notes Mr. Peloquin. "You now have computerized equipment whose price/performance rations are falling at amazing rates. To be competitive, a vendor can no longer afford the same level of support. The trend has got to be away from customer service and toward customer self-sufficiency. Problem is few companies know how to do it."

In the past, preparation and training often have been secondary to the technology itself. A number of troubled companies in recent years have tried to solve a problem by throwing technology at it. The results of this strategy have not been pretty.

International Data Systems, for example, estimates that approximately $10 billion has been spent thus far on material requirements planning (MRP) systems for computerized inventory control. Yet only 25 pct of these systems have achieved installation objectives.

No matter how much the preplanning, the focus is usually on technology, not people.

One company, H.R. Krueger Machine Tool, Inc., Farmington, Mich., decided that CIM was needed to remain competitive. The system was implemented, but according to Bruce L. Moore, president, the company found that high technology did not work on its own.

"It requires the added ingredient of committed people excited about the opportunities, not only now, but in the future," he explains. "We have gradually realized that because of this, in-house training has to be a permanent, ongoing and necessary part of our lives."

As companies adopt increasing amounts of technology, training efforts will grow in importance. Unable to run to a vendor for every training need, various forms of in-house training, such as computer-based training, will flourish. To ease the training burden, firms like General Motors and Ford have come out with machinery training specifications, says Mr. Peloquin.

"These say," he explains, "that if you are going to sell me a machine, the machine should have certain technical capabilities, but so should the training. The objective is to set measurable objectives for training and develop training standards."

Besides looking at improving training, companies are looking at other ways of removing the obstacles blocking technological implementation. One is that decision-makers know too little about manufacturing. This is changing.

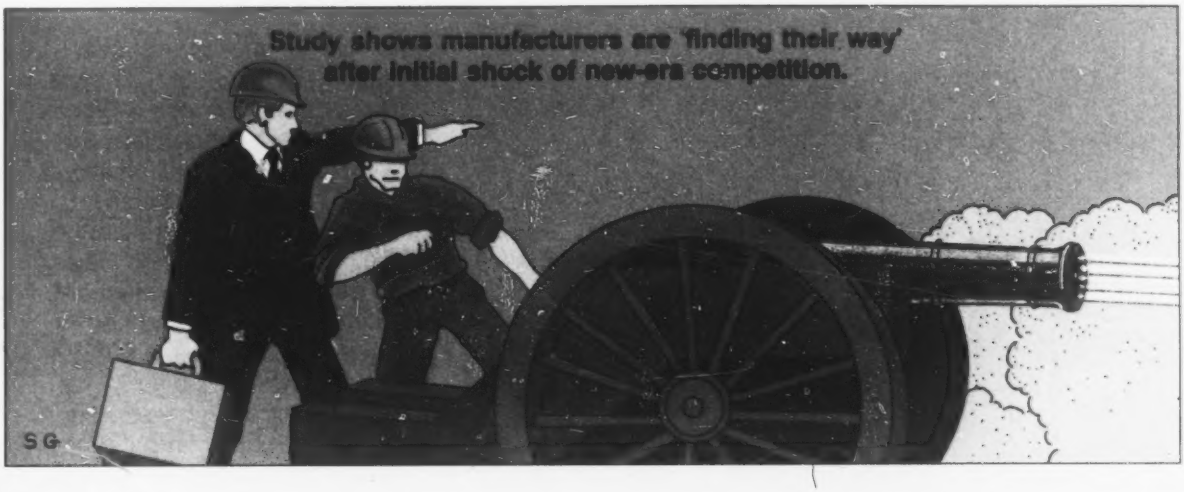
At Ex-Cell-O Corp.'s Cone Drive Div., computers and workers have been successfully integrated.

Executives with operations backgrounds are in demand.

According to *Management Practice Quarterly* from Management Practice Consulting Partners, N.Y., "44 pct of the newly appointed CEOs in 1985 had technical and operations backgrounds, compared to less than 30 pct in 1981. Last year, only 12 pct of newly appointed CEOs had a financial background.

"This change seems to indicate that U.S. business is responding to some of the bitter lessons of global competition, where pragmatic nuts-and-bolts skills may be more critical than abstract managerial skills." □

U.S. MANUFACTURERS SET TO COUNTERATTACK



BY JOHN D. BAXTER

North American manufacturers, caught up in a new era of intensified competition, may be finally getting down to business.

In a five-year series of survey studies, Boston University's Manufacturing Roundtable found that action programs of manufacturers in the last two years were more closely aligned with targeted priorities and concerns than in the previous three years.

"We interpret this finding," said the researchers, "as an indication that manufacturers' earlier confusion about how to meet competitive challenges is being replaced with a clearer understanding of what must be done and why."

And "what must be done" is to deliver to the marketplace better quality products – and at lower prices.

Analysts found support for this view in another finding of the over-the-years surveys. "North American manufacturers," they noted, "continue to emphasize quality, product performance and delivery in competition with others. However, the ability to offer lower prices than the competition is becoming increasingly important. This trend represents the most clear-cut change in priorities over the five years in which the surveys have been administered."

The new clarity of thinking, and toughness, of North American manufacturers comes to a sharp focus on what the effort is all about. Increasingly, top management is moving manufacturing operations to the front in corporate strategy and planning and setting up lines of communications to implement the shift.

A Competitive Weapon

Said Jeffrey G. Miller, director of the Roundtable, "We would like to believe that the perceived need to develop manufacturing as a competitive weapon is creating the need for managers and workers to communicate better."

The survey findings, and interpretation, highlights what may be the ultimate goal in all the ferment now going on in North American manufacturing – "to develop manufacturing as a competitive weapon."

As noted in just these three key findings of the Roundtable surveys, it appears manufacturing in North American companies is moving towards the Japanese model. In corresponding survey studies run in Japan, the Roundtable found that Japanese manufacturers rate product price as No. 1 in competitive importance. That element was still fourth-ranked by North American manufacturers in the 1986 study. But, notably, as the Roundtable studies show, product price is fast moving up on their priority list.

Too, there is no question but that the Japanese have used manufacturing as a "competitive weapon" in world trade wars – and to great effect.

There is special importance to manufacturers in the findings of the Roundtable studies. First, they have been run now over a period of five years. The series has the needed continuity to spot trends.

Secondly, corresponding surveys of manufacturers have been run in Japan and leading European countries. (The 1986 results of the foreign surveys are not yet

known at this time). This scope of the studies allows comparison of North American manufacturers with their world competitors.

Third, these surveys are important because they reflect the plans and actions of 'leader' or 'pace-setter' manufacturers in North America. How they think, and what they do, can serve as as industrial 'model.'

The 1986 survey received responses from senior managers in 182 business units. Noted Mr. Miller, "These companies, on average, were considerably more profitable and faster growing than the Fortune 500. The average business unit in the sample has also been investing in plants and R&D to a considerably greater extent than the average large American firm.

"Our conclusions about manufacturing in general are based on the presumption that these firms represent the opinion leaders that will set the pace for other manufacturing firms in the future."

Notably, more than 60 pct of the surveyed business units were in basic goods, machinery and other industrial goods lines.

The Roundtable studies, run by faculty members in the Business School at Boston University, and the Manufacturing Engineering Department, are sponsored by a number of leading manufacturing companies. These companies include General Electric Co., Whirlpool Corp., The Stanley Works and Digital Equipment Co.

Manufacturers, Top Concerns per Selected N. American Manufacturers

Concerns	1986 Scores	Ranking by Trends in Scores (1986 vs 1983)
1. Producing to Quality Standards	3.59	1. High Overhead costs
1. High Overhead Costs	3.57	2. Introducing New Products
3. Introducing New Products	3.47	**3. Lead Times
4. Forecasting (Poor Sales Forecasts)	3.21	4. Forecasting (Poor Sales Forecasts)
5. Yields,Rejects	3.12	5. Yields,Rejects
*6. Implementing New Technologies	3.12	6. Materials Costs
7. Materials Costs	3.11	7. Producing to Quality Standards
8. Lead Times	3.04	8. High Inventories
9. Indirect Labor Productivity	3.03	9. Indirect Labor Productivity
10. High Inventories	3.01	

* Question not included in surveys prior to 1896

** Trend-ranked from 1984

Scoring Values: Senior manufacturing manager's ranking by degree of current concerns on scale from 1 (no concern) to 5 (critical concern).

Manufacturer's Competitive Priorities per Selected N. American Manufacturers

Priority	1986 Scores	Ranking by Trends in Scores (1986 vs 1983)
1. Consistent Quality	4.54	1. Low Price
2. High Performance Products	4.08	2. Design Flexibility
3. Dependable Delivery	4.06	3. Consistent Quality
4. Low Price	3.81	4. Dependable Delivery
5. Fast Delivery	3.65	5. Fast Delivery
6. Design Flexibility	3.57	6. After Sales Service
7. After Sales Service	3.52	7. High Performance Products
8. Rapid Volume Changes	3.23	8. Rapid Volume Changes

Scoring Values: Senior manufacturing manager's ranking by degree of importance on scale from 1 (no effect) to 5 (critical).

A Hard Look

The 1986 study, as did the four preceding ones, looked hard at manufacturing's basic mandate—to cost effectively produce a product that will be a winner in a competitive marketplace. In that context, the 1986 study addressed three basic questions (although researchers asked many more):

—What are the major concerns of manufacturing managers, and how are they changing over time?

—What are the dominant competitive priorities currently being emphasized in manufacturing?

—What action programs are evolving to strengthen and improve manufacturing effectiveness?

Among manufacturing managers, the report authors, Mr. Miller and Aleda V. Roth, noted "an increasing concern with communications issues."

They said, "Particular problems show up with strategies and goal articulation, communicating manufacturers' needs to top management and communicating effectively with other functional areas."

Importantly, managers have noted, communications must flow down to worker ranks. The need is clear. "More than ever before," it was noted in the report, "workers

and line supervisors are beginning to understand strategic directions, and are being asked to play larger roles."

An important finding for producers of industrial capital goods is that "the focus on new technology has taken a back burner to the first priority of getting the entire plant operation under control."

Manufacturers, it was found, are emphasizing a variety of fundamental approaches, especially those which promise to improve product quality. Manufacturers, apparently, want to tighten all their plant operations before they move on to new equipment.

Another key finding of the 1986 survey—and a rising trend since earlier surveys—is that "the Just-In-Time (JIT) manufacturing philosophy is becoming firmly entrenched."

Mr. Miller said that JIT "challenges many assumptions about 'best practice' in manufacturing management and represents a significant departure for the firms that have adopted it."

He also noted that the companies with JIT are also the ones that most likely will be found developing significant programs to improve quality, reduce setups, broaden jobs and introduce computer-aided manufacturing.

Wide-Ranging

In order to identify the leading concerns of manufacturers, Roundtable researchers presented senior manufacturing managers with a list of 36 issues related to production planning and control, process technology, workforce activities, quality, costs, information systems and various other items. The managers were asked to indicate the degree of their current concern on a scale from 1 (no concern) to 5 (critical concern). The leading concerns, ranked in order and also showing in terms of trend over recent years, are listed in a box (see p. 33).

In sum, states the report, "The predominant issues facing management today are producing to quality standards, high and rising overhead costs and timely introduction of new products."

A notable shift in concern of top manufacturing managers has occurred in the cost area. Traditionally, direct labor costs have been high on the list of concerns. But now, it is overhead costs that get top billing. Those costs were ranked No.2 in concerns last year and moved to No.1 in 1986.

"Concern with high overhead costs," noted Mr. Miller, "is no doubt a reflection of increasing price consciousness, as well as concern with a problem area where manufacturers are less certain about solutions."

In the rankings of concerns over the past four years, 'producing to quality standards' has held on to first place. "But," noted the report, "that concern seems to have been released from the intensive care category over the past several years."

Mr. Miller feels that the hard work put into quality improvement programs in recent years has borne fruit. Quality is still a critical concern, but it is viewed as manageable with real progress having been made.

Competitive Priorities

A second line of questions by Roundtable members was designed to pinpoint the competitive priorities of manufacturing managers. In this case, the managers were asked to indicate, on a scale from 1 (no effect) to 5 (very critical), the degree of importance to the business unit of each of 8 'abilities' needed to compete successfully over the next five years. These abilities were then ranked in order of importance and noted for trend over the past four years. (see box for listings).

Not surprisingly, the two top-rated abilities noted in this year's survey were ability to achieve consistent product quality and ability to produce high-performance products. Below these top issues, the survey respondents indicated a need to improve delivery capability, lower product prices and bring more flexibility to product design.

In terms of a rising trend in need capabilities, 'low product prices' ranked No.1. Again, that is the horse in the race that is moving up fast.

Also, as Mr. Miller suggested, more U.S. top managers are now viewing 'manufacturing as a competitive weapon.' The cornerstone of such a strategy is the manufacturing capability to shake up a market in terms of a maximized price/quality combination.

Lower on the Roundtable strategic priority list this year were such concerns as ability to make faster deliveries, ability to make rapid design changes, introduction of more new products and efforts to improve the quality of after-sales service.

Clearly, the competitive priorities point to the objective of top-quality products at the lowest possible price tag—that is, maximum customer value.

Competitive priorities of manufacturers do not have the same

Manufacturer's Action Programs

Activities Rated as Significantly More Importantin 1986 than in 1985

1. Workers taking on broader jobs
2. Workers taking on more responsibility
3. Zero Defects programs
4. Statistical Process Control
5. Lead time reduction
6. Improving maintenance practices
7. Changing Manufacturing organization
8. Developing new processes for old products
9. Computer-Aided Manufacturing development

rankings for all industries. For example, in business units in machinery industries, after-sales service ranked fifth in 1986. For all business units surveyed, this ability ranked seventh. But, except for a few such exceptions, the rankings of priorities held up well across the full spectrum of manufacturing industries.

Key Action Programs

One of the key findings in the 1986 survey was, as noted, close alignment of concerns of manufacturers and the action programs they use, or plan to use, to deal with those concerns. This alignment was much closer than in surveys taken in previous years.

In the survey, action programs of manufacturers referred to programs currently underway, or where the firm planned to carry out a program over the next two years. Responses had a scale value from 1 (no emphasis) to 5 (critical emphasis).

Product quality was clearly in the lead in action programs in the 1986 survey. The first three programs in ranking were Statistical Process Control, Zero Defects and Vendor Quality. Programs to introduce more new products came in fourth place.

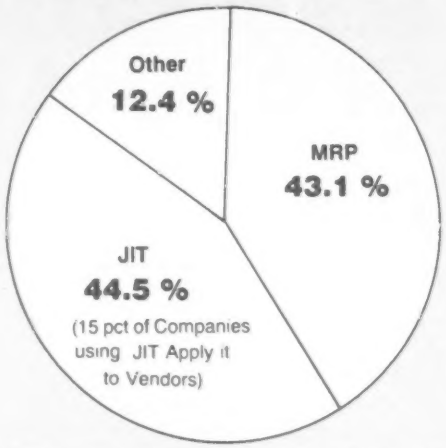
Next ranked were three programs centered in better control and integration of shop operations. By titles, these included Production Control Systems, Statistical Product Control and Manufacturing Systems Integration.

Motivation programs and lead times, and programs to reduce lead times were next.

Summing up on manufacturing action programs, Mr. Miller said, " 'Back-to-basics' production management is emerging on several fronts. We observe primary emphasis being placed on total quality control."

He noted also that "an important change" seems to be occurring in the way senior manufacturing managers are approaching production planning and inventory control.

Production Planning and Inventory Control System
Pct of Manufacturers Who Plan to Use



MRP = Materials Requirement Planning

JIT = Just-in-Time

During the past decade," he said, "materials requirement planning (MRP) had been the predominant way for manufacturers to improve their planning and control efforts. The survey suggests that MRP is giving way to... Just-in-Time (JIT)." (See diagram, p.39.)

A Clear Trend

The over-the-years trend in manufacturers' action programs is also revealing. Activities that were more important in 1986 than in 1985 show the growing importance of worker participation programs. (See box, p.36). The big gainer this year was programs designed around workers taking on broader jobs.

A point made by Mr. Miller is that business units using JIT tend to also emphasize use of such techniques zero defects, statistical process control (SPC), and vendor quality programs.

The study found little differences across industry boundaries in use of the various key action plans. "Managers in the basic industry sector," said Mr. Miller, "rate SPC programs higher in importance than their counterparts in the consumer goods area. Similarly, they place a higher priority on statistical product control than do those in the industrial goods manufacturing sector.

In a conclusion to the study, Mr. Miller stated, "In the first years in which this survey was administered (1982-83), there was considerable variance between what the respondents said were their top priorities and concerns, and their action programs. The 1985 and 1986 surveys reveal much more consistency in terms of the overall concordance between priorities, concerns and programs.

"We interpret these differences as heartening evidence that more manufacturers are finding their way after the initial shock of facing up to international competition in the early 1980s.

"We interpret the relative consistency of action plans in recent years to be a consequence of the eventual sorting out of various alternative programs for improvement that followed the discovery that 'something had to be done'."

In short, in shop terms, the 1986 Roundtable findings suggest that U.S. manufacturers finally 'have their act together.' □

PRICE & PRODUCTION DATA

(Effective November 3,1986)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	141	142	130	176
Pittsburgh	177	186	156	155
Youngstown	112	114	100	94
Lake Erie	109	106	103	146
Detroit	148	134	142	150
Chicago	341	340	329	439
Midwest	165	159	150	153
Southern	147	146	133	188
Western	43	42	40	82
U.S. Production	1,383	1,369	1,283	1,583

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural) ..... gross-ton 58.0*
Pellets (per iron unit natural) ..... gross-ton 59.4**
Pellets (per iron unit natural) ..... gross-ton 72.5-86.9***
Mesabi, regular-unscreened ..... gross-ton $32.53
Mesabi, non-bessemer ..... gross-ton $30.03-31.53

*58.0¢–Mineral Services, 8/13/85. **59.4¢–Inland Steel Mining, 1/1/85 and Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.5¢–U.S.Steel, 8/16/85. 86.9¢–Oglebay Norton 3/25/82; Hanna Mining and Cleveland-Cliffs 2/26/82.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective November 3,1986)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1986	To Date 1985
Net tons, in thousands	1,383	1,369	68,568	73,142
Capability Utilization Rate	57.2	56.6	64.0	65.4

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 8/31/86)	24.951	24.951	24.951	27.582
Pig Iron** (Net ton = 2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 74.17	$ 73.17	$ 73.17	$ 68.83
No. 2 bundles	$ 50.50	$ 50.50	$ 50.50	$ 50.17

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$ 78.50	$ 76.50	$ 76.50	$ 69.50
No. 1 steel, Philadelphia	71.50	71.50	71.50	67.50
No. 1 steel, Chicago	72.50	71.50	71.50	69.50
No. 1 bundles, Detroit	75.50	72.50	72.50	56.50
Low Phos., Youngstown	75.50	72.50	72.50	65.50
No. 1 mach'y cast., Pgh	74.50	74.50	74.50	68.50
No. 1 mach'y cast., Phila	93.50	93.50	93.50	91.50
No. 1 mach'y cast., Chi	101.50	101.50	101.50	97.50

*Finished Steel Composite: Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.
**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.
***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective November 3,1986) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	50.75	51.16	11/ 3/86
Copper (C)	62.00	63.00	10/31/86
Lead	26.75	25.50	10/31/86
Magnesium Ingot	153.00	148.00	12/ 9/85
Nickel (LME)	165.00-166.00	165.00	11/ 3/86
Zinc	47.00	44.50	10/ 6/86

ALUMINUM: Avg. for last week & previous week. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$248.00
Beryllium-copper, per lb. cont. Be	$152.00
Beryllium 97% powder 200	$196.00
Cadmium, ton lots	$1.00
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$11.70
Gold per troy oz.	$401.00
Indium, dollars per troy oz.	$2.65
Iridium, dollars per troy oz.	$420.00
Magnesium sticks, 10,000 lbs.	$2.02
Mercury, per 76-lb., f.o.b. N.Y.	$200.00-215.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz.	$130.00
Platinum, per troy oz.	$571.00
Rhodium, per troy oz.	$1,170.00
Silver ingots, per troy oz.	$5.64
Titanium sponge, melt grade	$3.40-3.55
Tungsten powder, hyd red.	$9.50-9.85
Vanadium	$6.00
Zirconium sponge	$11.00-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

October 27—N.A.
October 28—N.A.
October 29—N.A.
October 30—N.A.
October 31—N.A.

Scrap Prices
Brass Mill Scrap

(Cents per lb; over 20,000 lbs. add 1¢ per lb)

	Solids	Turnings
Copper	56	51
Yellow brass	50	49½
Red brass	51	47
Comm. bronze	52½	47½
Mang. bronze	41½	40½
Free cutting rod ends	49	48

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	53
No. 2 copper wire	48
Light copper	41

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	49
No. 2 copper wire	40
Light copper	32
No. 1 composition	45
No. 1 comp. turnings	44
Hvy. yellow brass solids	30
Hvy. yellow brass turnings	25
Radiators	34

Aluminum

New mixed clips	35	— 36
Old sheet	33	— 34
Old cast	33	— 34
Clean dry borings	34	— 35

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	28	— 29
Mixed L.C. clips	26	— 27
Old sheets and cast	23	— 24
Borings and turnings	19	— 20
Duraluminum clippings	24	— 25

Copper and Brass

No. 1 copper wire	44	— 47
No. 2 copper wire	35	— 36
Light copper	32	— 33
Radiators	22	— 23
No. 1 composition	36	— 37
No. 1 composition turnings	34	— 35
Cocks and faucets	30	— 31
Clean heavy yellow brass	26	— 28
Brass Pipe	26	— 27
New soft brass clippings	39	— 40

Lead

Heavy soft lead	5	— 7
Whole batteries	1	— 3
Type metal	15	— 17
Electrotype	13	— 14

Nickel

Nickel solids	105	—115
Nickel rod ends	105	—115
Nickel sheets, clips	105	—115
Nickel turnings	25	— 35

Zinc

New zinc clippings	16	— 17
Old diecast zinc	12	— 13

EFFECTIVE NOVEMBER 3, 1986

(Effective November 3, 1986) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 78.00 to	$ 79.00
No. 2 hvy. melting	68.00 to	69.00
No. 1 dealer bundles	96.00 to	97.00
No. 1 factory bundles (auto)	98.00 to	99.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	94.00 to	95.00
Machine shop turnings	8.00 to	9.00
Shoveling turnings	45.00 to	46.00
Cast iron borings	44.00 to	45.00
Low phos. punchings plate	104.00 to	105.00
Heavy turnings	68.00 to	69.00
No. 1 RR hvy. melting	86.00 to	87.00
Rails, 2 ft. and under	94.00 to	95.00
Scrap rails, random lgth	*6.00 to	87.00
RR specialties	94.00 to	95.00
No. 1 machinery cast	74.00 to	75.00
Cupola cast	67.00 to	68.00
Heavy breakable cast	30.00 to	31.00
Stainless		
18-8 bundles and solids	485.00 to	495.00
18-8 turnings	385.00 to	395.00

Chicago

No. 1 hvy. melting	$ 72.00 to	$ 73.00
No. 2 hvy. melting	68.00 to	69.00
No. 1 dealer bundles	85.00 to	87.00
No. 1 factory bundles (auto)	86.00 to	87.00
No. 2 dealer bundles	57.00 to	58.00
No. 1 busheling	84.00 to	85.00
Shredder scrap	80.00 to	81.00
Machine shop turnings	22.00 to	23.00
Mixed borings and turnings	14.00 to	15.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	39.00 to	40.00
Low phos. forge crop	93.00 to	94.00
Low phos. punchings plate 1/4 in. and heavier	111.00 to	112.00
Low phos. 2 ft. and under	106.00 to	107.00
No. 1 RR hvy. melting	76.00 to	77.00
Scrap rails random lgth	79.00 to	80.00
Reroller rails	100.00 to	101.00
Rails, 2 ft. and under	94.00 to	95.00
RR couplers and knuckles	79.00 to	80.00
RR car axles	104.00 to	105.00
No. 1 machinery cast	101.00 to	102.00
Cupola cast	89.00 to	90.00
Stove plate	97.00 to	98.00
Steel car wheels	85.00 to	86.00
Stainless		
18-8 bundles and solids	460.00 to	470.00
18-8 turnings	360.00 to	370.00
430 bundles and solids	125.00 to	135.00
430 turnings	85.00 to	95.00

Philadelphia

No. 1 hvy. melting	$ 70.00 to	$ 73.00
No. 2 hvy. melting	62.00 to	65.00
No. 1 dealer bundles	84.00 to	87.00
No. 2 dealer bundles	47.00 to	50.00
No. 1 busheling	84.00 to	87.00
Shredder scrap	82.00 to	85.00
Machine shop turnings	24.00 to	27.00
Mixed borings and turnings	24.00 to	27.00
Shoveling turnings	37.00 to	40.00
Low phos. 5 ft. and under	77.00 to	80.00
Low phos. 2 ft. punchings	91.00 to	94.00
Electric furnace bundles	93.00 to	96.00
RR specialties	77.00 to	80.00
Rails, 2 ft. and under	94.00 to	97.00
Cupola cast	81.00 to	84.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	92.00 to	95.00

Detroit

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 51.00 to	$ 52.00
No. 2 hvy. melting	50.00 to	51.00
No. 1 dealer bundles	75.00 to	76.00
No. 2 bundles	36.00 to	37.00
No. 1 busheling	73.00 to	74.00
Drop forge flashings	41.00 to	42.00
Machine shop turnings	24.00 to	25.00
Mixed borings and turnings	6.00 to	7.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	22.00 to	23.00
Heavy breakable cast	32.00 to	33.00
Mixed cupola cast	47.00 to	48.00
Automobile cast	71.00 to	72.00
Stainless		
18-8 bundles and solids	450.00 to	460.00
18-8 turnings	310.00 to	320.00
430 bundles and solids	115.00 to	125.00

Youngstown

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 57.00 to	$ 58.00
No. 2 hvy. melting	55.00 to	56.00
No. 1 dealer bundles	77.30 to	78.00
No. 2 dealer bundles	32.00 to	33.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	17.00 to	18.00
Low phos. plate	75.00 to	76.00
Electric furnace bundles	64.00 to	65.00
Galvanized bundles	61.00 to	62.00

Cleveland

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 56.00 to	$ 57.00
No. 2 hvy. melting	54.00 to	55.00
No. 1 dealer bundles	82.00 to	83.00
No. 1 factory bundles	83.00 to	84.00
No. 2 bundles	30.00 to	31.00
No. 1 busheling	71.00 to	72.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	17.00 to	18.00
Cast iron borings	20.00 to	21.00
Cut structural & plates 5 ft. and under	72.00 to	73.00
Cut structural & plates 2 ft. and under	93.00 to	94.00
Low phos. punchings plate	93.00 to	94.00
Foundry steel, 2 ft. & under	55.00 to	56.00
No. 1 RR hvy. melting	63.00 to	64.00
Rails, 2 ft. and under	92.00 to	93.00
Rails, 18 in. and under	94.00 to	95.00
No. 1 machinery cast	83.00 to	84.00
Mixed cast	50.00 to	51.00
Stainless		
18-8 bundles	450.00 to	460.00
18-8 turnings	315.00 to	325.00
430 bundles	120.00 to	130.00

Buffalo

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 55.00 to	$ 56.00
No. 2 hvy. melting	45.00 to	46.00
No. 1 busheling	75.00 to	76.00
No. 1 dealer bundles	75.00 to	76.00
No. 2 bundles	32.00 to	33.00
Machine shop turnings	13.00 to	14.00
Mixed boring and turnings	13.00 to	14.00
Shoveling turnings	19.00 to	20.00
Cast iron borings	27.00 to	28.00
Low phos. plate	78.00 to	79.00
Structural and plate 2 ft. and under	80.00 to	81.00
Rails, 2 ft. and under	79.00 to	80.00
Scrap rails, random lgth	61.00 to	62.00
No. 1 machinery cast	75.00 to	76.00
No. 1 cupola cast	71.00 to	72.00

St. Louis

No. 1 hvy. melting	$ 70.00 to	$ 71.00
No. 2 hvy. melting	59.00 to	60.00
No. 1 busheling	80.00 to	81.00
No. 1 dealer bundles	83.00 to	84.00
No. 2 bundles	55.00 to	56.00
Machine shop turnings	15.00 to	16.00
Shoveling turnings	19.00 to	20.00
Cast iron borings	26.00 to	27.00
No. 1 RR hvy. melting	76.00 to	77.00
Rails, random length	72.00 to	73.00
Rails, 5 ft. and under	85.00 to	86.00
RR specialties	77.00 to	78.00
Cupola cast	66.00 to	67.00
Heavy breakable cast	40.00 to	41.00
Stove plate	85.00 to	86.00
Steel car wheels	85.00 to	86.00
Rerolling rails	99.00 to	100.00
Unstripped motor blocks	49.00 to	50.00

Birmingham

No. 1 hvy. melting	$ 73.00 to	$ 74.00
No. 2 hvy. melting	69.00 to	70.00
No. 1 dealer bundles	73.00 to	74.00
No. 2 bundles	49.00 to	50.00
No. 1 busheling	73.00 to	74.00
Shredder scrap	95.00 to	96.00
Machine shop turnings	25.00 to	26.00
Shoveling turnings	36.00 to	37.00
Cast iron borings	36.00 to	37.00
Electric furnace bundles	69.00 to	70.00
Elec. furnace, 3 ft. & under	75.00 to	76.00
Structural and plate, 2 ft.	90.00 to	91.00
Structural and plate, 4 ft.	83.00 to	84.00
No. 1 RR hvy. melting	83.00 to	84.00
Scrap rails, random lgth	73.00 to	74.00
Rails, 2 ft. and under	93.00 to	95.00
Angles and splice bars	83.00 to	84.00
No. 1 cupola cast	82.00 to	83.00
Unstripped motor blocks	74.00 to	75.00

Cincinnati

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 54.00 to	$ 55.00
No. 2 hvy. melting	49.00 to	50.00
No. 1 dealer bundles	74.00 to	75.00
No. 2 bundles	32.00 to	33.00
Machine shop turnings	9.00 to	10.00
Shoveling turnings	12.00 to	13.00
Cast iron borings	19.00 to	20.00
Low phos. 18 in. and under	77.00 to	78.00
Rails, random length	59.00 to	60.00
Rails, 2 ft. and under	75.00 to	76.00
No. 1 cupola cast	65.00 to	66.00
Heavy breakable cast	25.00 to	26.00
Drop broken cast	67.00 to	68.00

New York

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 38.00 to	$ 40.00
No. 2 hvy. melting	31.00 to	32.00
No. 2 dealer bundles	20.00 to	22.00
Mixed borings and turnings	10.00 to	11.00
Machine shop turnings	4.00 to	6.00
Shoveling turnings	10.00 to	12.00
Clean cast chem. borings	35.00 to	36.00
No. 1 machinery cast	79.00 to	80.00
Mixed yard cast	50.00 to	51.00
Heavy breakable cast	10.00 to	12.00
Stainless		
18-8 prepared solids	380.00 to	400.00
18-8 turnings	280.00 to	320.00
430 prepared solids	90.00 to	100.00
410 solids	75.00 to	85.00

Boston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 49.00 to	$ 51.00
No. 2 hvy. melting	39.00 to	41.00
No. 1 dealer bundles	53.00 to	55.00
No. 2 bundles	32.00 to	34.00
No. 1 busheling	56.00 to	58.00
Shredder scrap	59.00 to	61.00
Machine shop turnings	12.00 to	14.00
Shoveling turnings	18.00 to	20.00
No. 1 machinery cast	72.00 to	77.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	8.00 to	10.00

San Francisco

No. 1 hvy. melting	$ 40.00 to	$ 42.00
No. 2 hvy. melting	34.00 to	36.00
No. 1 dealer bundles	31.00 to	33.00
No. 2 dealer bundles	20.00 to	21.00
Machine shop turnings	8.00 to	9.00
Cast iron borings	8.00 to	9.00
No. 1 cupola cast	80.00 to	82.00

Los Angeles

No. 1 hvy. melting	$ 34.00 to	$ 36.00
No. 2 hvy. melting	28.00 to	30.00
No. 1 dealer bundles	26.00 to	28.00
No. 2 dealer bundles	16.00 to	18.00
Machine shop turnings	9.00 to	10.00
Shoveling turnings	10.00 to	11.00
Cast iron borings	8.00 to	9.00
Elec. furnace, 1 ft. and under (foundry)	67.00 to	69.00
No. 1 cupola cast	72.00 to	74.00

Seattle

No. 1 hvy. melting	60.00 to	62.00
No. 2 hvy. melting	51.00 to	53.00
No. 2 bundles	35.00 to	37.00
No. 1 cupola cast	89.00 to	90.00
Mixed yard cast	80.00 to	82.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 74.00
No. 2 hvy. melting, cut 2 ft. and under	66.00
No. 1 dealer bundles	82.00
No. 2 bundles	58.00
Mixed steel scrap	53.00
Bush. new fact. prep'd	77.00
Bush. new fact. unprp'd	60.00
Machine shop turnings	30.00
Short steel turnings	30.00
Mixed borings and turnings	19.00
Cast scrap	97.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 62.00 to	$ 63.00
No. 2 hvy. melting	52.00 to	53.00
No. 2 bundles	33.00 to	34.00
Machine shop turnings	13.00 to	14.00
Crushed turnings	23.00 to	24.00
Shredder scrap	71.00 to	72.00
Cut structural plate, 2 ft. and under	88.00 to	89.00
Cut structural plate, 5 ft. and under	70.00 to	71.00
Unstripped motor blocks	54.00 to	55.00
Cupola cast	81.00 to	82.00

TAKE THIS PRICE DATA WITH A GRAIN OF SALT

There wasn't anything scary about producer prices in September. That is, there weren't any signs of a breakout on the upside.

But there were some puzzling aspects to the U.S. Labor Dept.'s report on producer finished goods prices for the month.

First off, prices moved up. They rose by 0.4 pct from August. Still, there is evidence the rise did not signal new underlying inflation pressures.

One reason for this rather sharp turn-up was a 3.7 pct rise in prices of finished energy goods. Energy prices had been falling sharply just about every month. But, in September, reflecting an earlier OPEC agreement to curb production, oil prices rose. It was a quirk; oil prices are already heading down again.

Another development colored prices in September. Note on the table here, the sharp decrease in auto and truck tags from August to September. That may puzzle many, especially those who shopped for cars during the month.

The slide in auto prices shown here was seasonally adjusted to a rise. Prices had been discounted for several months to clear year-end stocks. This meant that September of this year did not carry the usual great bulk of price discounting as in past years. So, after the usual seasonal adjustments were made this year, the effect was to raise prices on autos and trucks in September. Before seasonal adjustment, as shown, these prices were actually down.

So, between unusual actions affecting energy prices, and unusual seasonal factors upsetting auto prices, September was not a month on which to make any definitive price trend judgments.

Latest Month Covered: September 1986

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	405.0	+ 0.1	+ 1.7
Metal Forming Machine Tools	441.1	0	+ 1.5
Agricultural Machinery & Equip.	340.1	– 0.1	+ 0.8
Construction Machinery & Equip.	366.9	– 0.1	+ 1.1
Oil and Gas Field Machinery	408.0	– 1.0	– 4.3
Industrial Material Handling Equip.	297.1	+ 0.1	+ 0.7
Pumps, Compressors & Allied Equip.	363.3	+ 0.2	+ 1.9
Mining Machinery & Equipment	382.3	+ 0.4	+ 0.6
Mechanical Power Transmission Equip.	347.9	0	+ 2.4
Automobiles	223.1	– 4.0	+ 6.4
Motor Trucks – Light	294.9	– 3.7	+ 7.8
Motor Trucks – Heavy	335.2	– 3.7	+ 5.8
Railroad Equipment	363.2	– 1.3	– 0.4
Fabricated Metal Structural Products	317.2	0	+ 0.7
Electric Motors	353.5	+ 0.1	+ 0.6
Valves & Fittings (Dec. 1982 = 100)	107.1	+ 0.2	+ 1.6
Ball & Roller Bearings	356.9	0	+ 0.9
Foundry & Forge Shop Products	361.7	– 0.1	– 0.6
Heating Equipment	271.3	+ 0.9	+ 3.7
Plumbing Fixtures & Brass Fittings	324.8	+ 0.7	+ 3.5
Metal Containers	362.5	0	+ 1.3
Internal Combustion Engines	353.8	– 0.1	+ 1.7

Data based on U.S. Labor Dept.'s Producer Price Index